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oaks. *Pinus nigra* appears early in rock formations inland; with this exception there is little in common between the Mediterranean and inland forests. There are great areas of rocky heath inland having the physiognomy but not the floristic features of the heaths near the sea. The inland heath, too, is potentially a forest, while the coastal heath is an expression of the Adriatic climate.

A third section deals with the mountains and many interesting features are here described. There is a decided dominance of xerophytic associations, alpine meadows and similar formations being rare. Magnificent forests of beech, fir, and spruce characterize the lower portions of the mountains, just above the oaks. This forest type is not found on the seaward side of the mountains because of the severe climate, which permits only xerophytic trees like *Pinus nigra* to prosper. The beech approaches the lowlands more than do the spruce and fir, while the latter are more characteristic of the higher mountain districts. Various pines dominate in xerophytic areas. The sub-alpine thicket is composed of pine, juniper, and various other shrubs which form a typical "krummholz." The alpine plants embrace a large number of endemic species, but there are also many widespread forms.

The work concludes with some chapters on the floristic subdivision, history, and relationship of the Illyrian countries. Though the subdivision is purely floristic, rainfall is regarded as the chief distributional factor. The book is well up to the high standard previously set by Willkomm, Pax, and Radde. It is also of peculiar importance since it is the only available work which sums up for general use the broad facts of plant distribution in southeastern Europe.—H. C. COWLES.

MINOR NOTICES.

KENNETH K. MACKENZIE, assisted by B. F. Bush and others, has published a *Manual of the flora of Jackson county, Missouri*.² It brings together the records of several local floras, beginning with the *Flora of Jackson county* by Mr. Bush in 1882. So far as the reviewer knows, this is the first manual with full descriptions and keys devoted to a single county published in the United States. The advantages of such a manual for local use are very evident, and the students of botany in Jackson county are specially favored. The book is exceptionally well printed, and with its keys, glossary, and indexes is a very complete manual. The summary shows that 1141 species and 51 varieties are included.—J. M. C.

A NEW disease of cultivated bananas near Alexandria, Egypt, has been noted for three years.³ It is characterized by a sudden check of growth, the leaf-points and central leaf blacken and die, putrefaction sets in and proceeds

² 8vo, pp. xix + 242. Kansas City, Mo. 1902.

³ FAWCETT, WILLIAM, A banana disease. Bull. Bot. Depart. Jamaica IX, 100-105.

downward in the latter, and the stem bears many small, crippled leaves. Nematodes were found to be the cause of the trouble. Recently the same disease has again appeared near Alexandria. Microscopic examinations showed that the nematodes were more abundant in the secondary roots than in the main ones. The secondary roots are destroyed, the food supply is thus cut off and the growth is checked in consequence. The matter is complicated by the presence of other species of nematodes. "Trap-crops" are suggested for the removal of most of the nematodes. This it is argued will remove so many that they will not be especially injurious. No other definite remedy is given.—P. SPAULDING.

NOTES FOR STUDENTS.

P. J. O'GARA,⁴ of the University of Nebraska, has conducted experiments which indicate that *Sphaeropsis rhoina* of the sumac and *S. malorum* of the apple are the same fungus. At least, the former will cause black rot in the fruit of the apple, and will also produce the typical "canker" on the branches just as readily as the latter.—J. M. C.

MRS. E. G. BRITTON and Miss A. Taylor⁵ have published an account of the morphology and anatomy of *Vittaria lineata*. The prothallium is irregularly branched and consists of a single plate of cells. It has remarkable powers of vegetative propagation and produces gemmae very similar to those described by Goebel for *V. elongata*. The antheridia are very numerous, and are produced either upon the ventral surface of the prothallium or upon the gemmae, and rarely upon the same prothallium as the archegonia. The development of the antheridium is of the usual polypod type, with funnelform wall and cap cell, and twelve or twenty-four sperms are produced. The long stalk of the sporangium seems to be formed chiefly by a single row of three or more elongated cells, longitudinal divisions occurring next to the spore-case. The interesting observation is made that the small stalk-cells at the base of the spore-case become very much inflated, and when the case opens they tilt it back. Long-stalked, branching, and multicellular paraphyses occur among the sporangia, the terminal cells being elongated, curved, and enlarged at apex.—J. M. C.

ITEMS OF TAXONOMIC INTEREST are as follows: SPENCER LEM. MOORE (Jour. Bot. 40: 305. pl. 441. 1902) has described a new African genus (*Amphoranthus*) of Caesalpinea from Damaraland.—E. L. GREENE (Pittonia 5: 1-56. 1902) has published 6 new species of *Acer*, 22 new species of *Microseris*, 14 new species of *Phacelia*, 7 new segregates of *Viola canadensis*, 8 new acaulescent violets, a revision of *Romanzoffia* (10 species, 8 of which are

⁴ Science 15: 434-435. 1902.

⁵ The life history of *Vittaria lineata*. Memoirs Torr. Bot. Club 8: 185-211. pls. 23-31. 1902.